Chapter 3

TRANSCEIVER OVERVIEW

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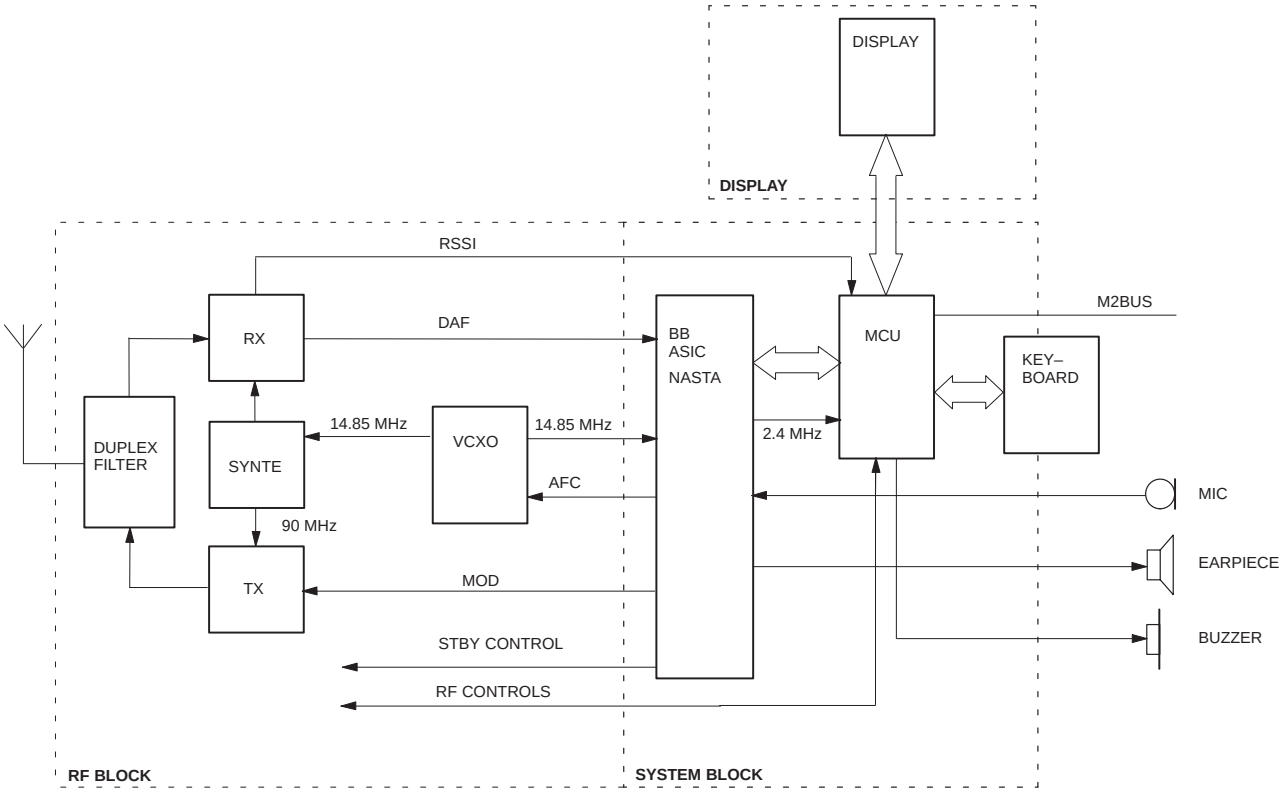
Introduction

The NHA–2 series is an advanced analog handportable cellular telephone for operation on the E–AMPS cellular system. The design is fully compatible with the AMPS Mobile Station / Land Station specification. The telephone contains many advanced user facilities and is designed for ease of maintenance.

The transceiver electronics consists of radio module (baseband and RF blocks) and display module. Display is connected to radio module with a connector. Baseband (system) and RF blocks are interconnected with PCB wirings. Transceiver can be connected to accessories with a bottom system connector, which includes charging and accessory interfaces.

The NHA–2 transceiver contains a H8/3042 microcontroller with internal 64 kB ROM and 2 kB RAM. For tuning values and phone numbers there is a 2 kB EEPROM memory.

Block Diagram



The system block provides the MCU environment, baseband IC (NASTA) and EEPROM memory. The baseband IC (NASTA) consists audio processing and modem functions. On board power supply IC (MUUMI) circuit delivers operating voltage for system blocks and reference voltage for RF.

The microcontroller, Hitachi H8, communicates with the baseband ASIC with the 8–bit data bus.

The RF block is designed for handportable phone which operates in AMPS system. the purpose of RF block is to receive and demodulate the radio frequency signal from the base station and to transmit a modulated RF signal to the base station.

See more detailed description from baseband and RF block diagrams.

Power Distribution

The power supply is based on the ASIC circuit MUUMI. The chip consists of regulators and control circuits providing functions like power up, reset and watchdog. The MCU and MUUMI circuits control charging together, detection being carried out by the MUUMI and higher level control by the MCU. The MCU measures battery and charger voltage aswell as the temperature and size of the battery.

The detailed power distribution diagrams are located to system module document.

System Software

The whole main software is located in the internal OTPROM or mask ROM of the controller. The main parts of the software are:

- OS operating system
- LN local network (MBUS driver)
- CS cellular system signalling
- UI user interface
- DEV device control, battery charging, compensations, local I/O, permanent data storing, MBUS interface
- HW hardware drivers

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